

## Welcome to Today's Expert Webinar for the 2019 MQii Learning Collaborative: **"The RDN/Oncology Patient Relationship: How** Nutrition Interventions Work"

We will get started promptly at 2:00PM ET (1:00PM CT; 12:00PM MT; 11:00AM PT) All phone lines have been muted

The Malnutrition Quality Improvement Initiative (MQii) is a project of the Academy of Nutrition and Dietetics, Avalere Health, and other stakeholders who provided guidance and expertise through a collaborative partnership. Support provided by Abbott.

#### Before We Get Started...





Today's Agenda

Agenda Item	Presenter
Welcome and introduction to the "The RDN/Oncology Patient Relationship: How Nutrition Interventions Work" webinar	Kelsey Jones
Engaging the Patient and Caregiver: Communicating the Importance of Nutrition in Oncology Care	Suzanne Dixon, MPH, MS, RDN
Case Study of a Malnutrition Screening at an MQii Learning Collaborative Site in Oncology Care at Ohio State University Medical Center (OSUWMC)	Natalie Stephens, RDN, LD, FAND
Questions – 15 mins	







- Importance of nutrition care in cancer care diagnoses
- Examples of different types of weight loss as it relates to cancer care
- Focus on nutrition & exercise in the cancer care continuum

Suzanne Dixon, MPH, MS, RDN *Registered Dietitian & Epidemiologist Senior Medical Writer The Mesothelioma Center, Orlando, FL* 

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### Why Is Nutrition Care Important?

- Cancer can profoundly affect nutrition status and affect nutrition-related, co-morbid conditions
- Cancer affects an astounding number of people
- Few people have access to nutrition care before, during, or after a cancer diagnosis
- Poor nutrition status is strongly predictive of poor outcomes.
- What kind of care do you want to provide? Raise your hand



#### Figure 1. Estimated Numbers of US Cancer Survivors

#### As of January 1, 2016

As of January 1, 2026

Male	Female	Male	Female
Prostate	Breast	Prostate	Breast
3,306,760	3,560,570	4,521,910	4,571,210
Colon & rectum	Uterine corpus	Colon & rectum	Uterine corpus
724,690	757,190	910,190	942,670
Melanoma	Colon & rectum	Melanoma	Colon & rectum
614,460	727,350	848,020	885,940
Urinary bladder	Thyroid	Urinary bladder	Thyroid
574,250	630,660	754,280	885,590
Non-Hodgkin lymphoma	Melanoma	Non-Hodgkin lymphoma	Melanoma
361,480	612,790	488,780	811,490
Kidney & renal pelvis	Non-Hodgkin lymphoma	Kidney	Non-Hodgkin lymphoma
305,340	324,890	429,010	436,370
Testis	Lung & bronchus	Testis	Lung & bronchus
266,550	288,210	335,790	369,990
Lung & bronchus	Uterine cervix	Leukemia	Uterine cervix
238,300	282,780	318,430	286,300
Leukemia	Ovary	Lung & bronchus	Kidney & renal pelvis
230,920	235,200	303,380	284,380
Oral cavity & pharynx	Kidney & renal pelvis	Oral cavity & pharynx	Ovary
229,880	204,040	293,290	280,940
Total survivors	Total survivors	Total survivors	Total survivors
7,377,100	8,156,120	9,983,900	10,305,870

NOTE: Beginning with the 2016-2017 edition, estimates for specific cancer types now take into account the potential for a history of more than one cancer type. Estimates should not be compared to those from previous years. See Sources of Statistics, page 34, for more information.

Source: Surveillance Research Program, Division of Cancer Control and Population Sciences, National Cancer Institute.

American Cancer Society, Surveillance and Health Services Research, 2016

Cancer Treatment & Survivorship Facts & Figures; American Cancer Society 2016 http://www.cancer.org/acs/groups/content/@research/documents/document/acspc-048074.pdf

## What is Malnutrition?

An acute, subacute or chronic state of nutrition, in which a combination of varying degrees of overnutrition or undernutrition with or without inflammatory activity have led to a change in body composition and diminished function.

A state of nutrition in which a deficiency, excess, or imbalance of energy, protein, and other nutrients causes measurable adverse effects on body function and clinical outcome.





BAPEN. (2003). Malnutrition Advisory Group. Retrieved from <u>https://www.bapen.org.uk/pdfs/must/must-report.pdf</u> ASPEN. (n.d.). Definitions. Malnutrition. Retrieved from <u>https://www.nutritioncare.org/Guidelines\_and\_Clinical\_Resources/Toolkits/Malnutrition\_Toolkit/Definitions/</u>

## Not All Weight Loss Is Good Weight Loss

### Unintentional vs. Intentional Weight Loss

#### Intentional Weight Loss

- Short term mobilization of fat and lean body tissues
- Rapid upregulation of fatty acid lipases
- Rapid change from using fat & lean tissues for energy to utilizing predominantly fat
- Preservation of lean tissue
- Upregulation of hunger hormones



#### Unintentional Weight Loss

- Short- and long-term mobilization of fat and lean body tissues, driven by inflammatory processes
- Failure to upregulate fatty acid lipases
- Inappropriate and continued mobilization of lean tissue
- Failure to preserve lean tissue
- Failure to upregulate hunger hormones



### Failure to Adapt to Calorie Deficit Is Profound

- Detailed Metabolic/Functional Study of Head and Neck Cancer Patients (n = 17), Mean age = 59 yrs.
- Group included underweight, normal weight, overweight subjects
- Measures of REE, functional status, physical performance, body composition (DEXA), CRP, cytokines and 24-hour food recalls

#### RESULTS

- Weight loss began 1 week after chemo-radiation
- Average total loss of 6.8 kg (14.9 lbs; p<0.0001)
- Lean body mass accounted for 72% of weight lost

#### Not All Weight Loss Is Good Weight Loss!

#### Skeletal Muscle Depletion is a Powerful Prognostic Factor

Two prognostic models of survival in **lung** & GI cancer patients (n=1,473) (BMI distribution: 17% obese, 35% overweight, 36% normal weight, and 12% underweight)

- Conventional covariates: tumor type, stage, age, performance
- Nutrition covariates: BMI, weight loss, muscle index/attenuation



Martin L, et al. (2013). Retrieved from https://ascopubs.org/doi/full/10.1200/JCO.2012.45.2722

#### Immunotherapy & Obesity

VIEWPOINT

EVOLVING ISSUES IN ONCOLOGY The Surprisingly Positive Association Between Obesity and Cancer Immunotherapy Efficacy

IMMUNOTHERAPY, VOL. 11, NO. 1 | EDITORIAL

The complicated effects of obesity on cancer and immunotherapy

News & Views | Published: 22 January 2019

OBESITY

# The 'obesity paradox' in action with cancer immunotherapy

Joanne Lysaght 🖾

Nature Reviews Endocrinology 15, 132–133 (2019) Download Citation 🕹

#### REMEMBER: Not all weight loss is good weight loss.

Murphy WJ and Longo DL. (2019). Retrieved from DOI: 10.1001/jama.2019.0463 Wang Z et al. (2019). Retrieved from DOI: 10.2217/imt-2018-0133 Lysaght J. (2019). Retrieved from https://www.nature.com/articles/s41574-019-0161-2

## Evidence Analysis Library: 2007 – 2013 Oncology Nutrition Update

# 6 original questions, 95 articles, 16 conclusion statements and 15 recommendations.

•Grade I: Good – the evidence consists of results from studies of strong design for answering the question addressed.

•Grade II: Fair - the evidence consists of results from studies of strong design

- •Grade III: Limited numbers of studies
- •Grade IV: Expert opinion only

•Grade V: Not assignable



## **Evidence Analysis Library: Oncology 2013**

Poor nutrition status is associated with decreased tolerance to radiation treatment in adult oncology patients

Poor nutrition status is associated with decreased tolerance to chemotherapy treatment in adult oncology patients

Poor nutrition status is associated with increased length of hospital stay (LOS) in adult oncology patients.

Poor nutrition status is associated with lower quality of life (QoL) in adult oncology patients.

Poor nutrition status is associated with mortality in adult oncology patients.

Evidence Analysis Library. Nutrition Status and Outcomes in Adult Oncology Patients. (2013). Retrieved from http://andeal.org/topic.cfm?menu=5291&cat=4957











## Why is Malnutrition So Harmful?

What is Lean Body Mass (LBM)?

- Organs
- Muscle
  - Skeletal Muscle: attached to bones and moves the skeleton
  - Smooth Muscle: located in the walls of hollow internal structures
  - Cardiac Muscle: forms the heart
- Bone
- Red and white blood cells, platelets, plasma and serum proteins, connective tissue...

### LBM encompasses everything but fat





What Drives Malnutrition & Loss of LBM?

- Decreased protein synthesis
  - Aging

Bed rest/sedentary behavior ("sitting disease")

- Chronic disease
- Acute disease
- Failure to meet increased protein needs with aging
- Increased protein breakdown
  - Illness and injury
  - Increased oxidation
  - Aging
  - Surgery, medications, medical interventions
- Gameiro PA and Struhl K. (2018). Retrieved from doi: 10.1016/j.celrep.2018.07.021.
- Ábrigo J et al (2018). Retrieved from doi: 10.1155/2018/2063179.
- Reisz JA et al. (2018). Retrieved from doi: 10.1080/14789450.2018.1453362.
- Gaffney-Stomberg E et al. (2009). Retrieved from doi: 10.1111/j.1532-5415.2009.02285.x.

#### Additional Protein Synthesis Challenges Contribute to Imbalance

- Muscle protein synthesis rates decrease with age; lower in older than in younger adults
- Reduced by 30% with 10 days of inactivity
- Ability of muscle to regenerate following injury or overload decreases with age
- Muscle composition can change, affecting function and mobility

Muscle Lost Is Difficult to Regain



Booth FW et al. (2017). Retrieved from doi: 10.1152/physrev.00019.2016. Sreekumaran Nair K (2005). Retrieved from https://doi.org/10.1093/ajcn/81.5.953. McGregor RA et al. (2014). Retrieved from doi: 10.1186/2046-2395-3-9.

### Why Are So Many at Risk of Loss of LBM?

- Sedentary
  - Elderly
  - Bedrest
  - Disability
  - Chronic Obstructive Pulmonary Disease (COPD)
  - Surgery, Sepsis, Trauma
  - Chronic Kidney Disease



### Beyond Simple Obesity: You Can Be "Overfat" and Undernourished

**Sarcopenia** in cancer patients, regardless of BMI is associated with:

- Poor functional status
- Shorter time to tumor progression
- Shorter survival
- Higher incidence of dose-limiting toxicity
- And may alter metabolism of cytotoxic agents



# Righting the Ship: Focus on Nutrition & Exercise

## Optimal Situation – RDNs Available Throughout the Cancer Continuum

Pre-treatment	Treatment	Post-treatment
<ul> <li>Screen for malnutrition</li> <li>Determine baseline nutritional status, replete nutrient deficiencies as needed</li> <li>Discuss potential treatment related side- effects, and nutritional strategies for minimizing the side effects</li> <li>Review food safety guidelines</li> </ul>	<ul> <li>Monitor changes in nutritional status as the treatment course progresses, modify nutrition plan as needed</li> <li>Identify appropriate foods (e.g. taste, texture, temperature) to optimize dietary intake as treatment- related side effects develop</li> <li>Review safe food handling procedures during neutropenia</li> </ul>	<ul> <li>Prevent weight gain</li> <li>nutrition-related late effects</li> <li>chronic diseases</li> </ul>

## Protein, Protein, Protein

40% of people age 70 or older consume less than 100% of RDA for protein

#### RDA = 0.8 g/kg/day

#### **Common Protein Guidelines**

- Prevent sarcopenia: 1 to 1.5
- Elderly: 1.2 to 1.5
- Wound healing: 1.25 to 1.5
- Trauma/surgery 1.5 to 2
- Chronic illness 1.5 to 2

## What is the Solution?

- **Resistance exercise**, preferably with a trained professional
- **PT and Rehab**, coupled with nutritional support
- **High quality protein** (with essential amino acids) stimulates muscle protein synthesis

Increased protein requirements for older people above the current adult RDA



### **Key Nutritional Goals**

### For Cancer

Energy

- 25 to 35 calories per kilogram bodyweight per day
  - 11.5 to 16 calories per pound bodyweight per day
  - Sources: Healthy fats (olive oil, nuts & nut butters, avocados), starchy vegetables (Purple and white potatoes, orange sweet potatoes, yellow yams, orange and yellow squash), fresh or frozen fruit

Protein

- 1.5 g protein per kilogram bodyweight per day
  - 0.7 g protein per pound bodyweight per day
  - Sources: Chicken; Fish; Lean beef and pork; Greek yogurt; Beans, lentils and peas; Soy foods; Eggs; Nuts; Cheese; oral, liquid nutritional supplements

### **Protein Distribution Matters**

#### **Typical** Daily Protein Distribution

- Breakfast: 10 g
- Lunch: 20 g
- Dinner 60 g

Ideal Daily Protein Distribution

- Breakfast: 30 g
- Lunch: 30 g
- Dinner 30 g

STUDY: EVEN vs. SKEW protein intake. n = 8 adult men & women

- 24-hour muscle protein synthesis 25% higher in EVEN vs. SKEW groups.
- Maintained after 7 days habituation to the diet

CONCLUSION: The consumption of a moderate amount of protein at each meal stimulated 24-h muscle protein synthesis more effectively than skewing protein intake toward the evening meal.

## Take Home message

- Patient must understand connection between unintentional weight loss and poor outcomes
- Lean body mass and muscle are vital for life and recovery
- Several mechanisms may overlap to accelerate loss aging, bed rest, medical conditions, and inflammation
- Many are at risk and you may not realize it
- Loss of lean body mass reduces chance of recovery
- Don't assume Normal BMI = Normal LBM
- Identify loss of lean body mass (and poor dietary intake)
- Intervene early and couple nutrition intervention with treatment, rehab and PT interventions





- Malnutrition and cancer care: high-level statistics and a partnership strategy
- Highlight a national quality improvement project in implementation and validation of a malnutrition screening tool in routine oncology cancer care

Natalie Stephens, RDN, LD, FAND Lead Dietitian at the Ohio State University Medical Center Assistant Director, Nutrition Services

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## **Malnutrition & Cancer**

- 30% to 80% of cancer patients malnourished at some point during cancer care
- > 50% exhibit nutritional impairments at the first visit

Muscaritoli M, et al. Oncotarget 2017;8:79884.



## **Malnutrition & Outcomes**

- Involuntary weight loss of 5% is associated with decreased survival
- Increased
  - Morbidity and mortality
  - Treatment interruptions
  - Readmission rates
  - Side effects
  - Risk of cancer recurrence
- Decreased
  - Tolerance to chemo and radiation
  - Quality of Life
  - Functional performance

Ryan AM, et al. Proc Nutr Soc 2016;75:199. Laviano A, et al. Intern Emerg Med 2017;12:135. Hoppe S, et al. J Clin Oncol 2013;31:3877. Lis CG, et al. Nutr J 2012;11:27. Tisdale MJ. Nat Rev Cancer 2002;862. Academy of Nutrition and Dietetics. Evidence Analysis Library: Oncology Evidence-Based Nutrition Practice <u>https://andeal.org/topic</u>



## **Partnership Strategy**

American College of Surgeons Commission on Cancer

Association of Community Cancer Centers

Victorian Department of Health in Australia American and European Societies of Parenteral and Enteral Nutrition

National Institute for Health and Care Excellence of Great Britain

Organizations who advocate for formalized nutrition screening and assessment, nutrition care plans, and early medical nutrition therapy



## **Clinical Care Standards**

#### Nutrition Standards

- >90% oncology care in outpatient centers
- Joint Commission standards:
  - Inpatient within 24 hours admittance
  - Outpatient when warranted (ambiguous)
- **CoC:** Am College of Surgeons' Commission on Cancer
- ACCC: Association of Community Cancer Centers
- NCCN: National Comprehensive Cancer Network
  - > 60 oncology practice guidelines
  - > 10 million downloads in 2018
  - Insurance coverage and quality evals



## **National Malnutrition Screening Project**

- QI project to evaluate implementation and utilization of a validated screening tool in routine oncology cancer care
- MST (Malnutrition Screening Tool) implemented in EMR of 3 outpatient cancer centers



Alice Shapiro & Sarah Johnson



Jeannine Mills & Elise Cushman



Colleen Spees & Natalie Stephens



## **Validated Malnutrition Screening Tools**





## **Screening Results**



Total Unique Patients All Centers = 381,369Completed MST > 70%Patient MST  $\ge 2 = 8\%$ 



## **BPA Results**





## Head & Neck Poster Project – MST realization



Malnutrition Per MST and NFPE Scores Over Time						
Patient	Tool	Week 1	Week 3	Week 5	Week 7	
1	MST	No	No	Yes	Yes	'
	NFPE	None	None	None	Severe	
2	MST	No	No	No	Yes	
	NFPE	None	None	None	Mod	
2	MST	No	No	No	Yes	
2	NFPE	None	None	None	Mild	
4	MST	No	Yes	No	No	
4	NFPE	None	None	None	Severe	
E	MST	No	No	No	No	
5	NFPE	None	None	Mod	Mod	
6	MST	No	Yes	Yes	No	
	NFPE	None	Mild	Severe	Severe	
7	MST	No	No	No	No	
<b>'</b>	NFPE	None	None	None	Mild	
•	MST	No	No	No	No	
°	NFPE	None	None	Mild	Severe	
9	MST	No	No	Yes	Yes	
	NFPE	None	None	None	Severe	
10	MST	No	No	No	No	
10	NFPE	None	Mild	Mod	Severe	
kappa*	0.222** (fair agreement)					

Malnutrition Risk

MCT Coore	No	
WIST Score	Yes	
NFPE Score	None	
	Mild	
	Moderate	
	Severe	

#### Disagreement Between MST/NFPE





## **Connecting Inpatient & Ambulatory**

- Embrace networking, team building
- Utilize in basket messaging
  - Ambulatory: tracking admissions
  - Inpatient: discharge planning messages



## **Questions?**



15 mins

